



## Ultra-Efficient Epitaxial Liftoff Solar Cells Exploiting Optical Confinement in the Wave Limit: Final Technical Report

By National Renewable Energy Laboratory (NREL)

Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.This report describes work performed by the University of California during this subcontract. In this project, we pursued the epitaxial liftoff approach, which leaves a very clean substrate after use that can be readily reinserted into an epi-growth reactor. If, as many believe, the epi-growth step can be streamlined and reduced in cost, this would produce the highest possible performance cell, at a cost no higher than other thin-film technologies. We have found, as a number of other groups have, that the epitaxial liftoff process is vulnerable to microscopic cleavage cracks in the lifted-off films. The larger the area of the lifted-off epi-film, the greater the risk of microscopic cleavage cracks. Such cracks block the passage of electricity and are unacceptable in solar cells. This has restricted us to relatively small-area solar cells, which though they performed well, told us very little about scale-up. In the area of lifted-off films, a group in the Netherlands has recently published favorable results using a thin evaporated copper film as a mechanical support layer for the lifted-off GaAs. We have tested...



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